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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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07/870,759 04/20/92 CHENARD

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EXAMINER

HOKE, V

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1300 I STREET, N.W.
WASHINGTON, DC 20005-3315

15M1

ART UNIT	PAPER NUMBER
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1511

#71

DATE MAILED: 03/26/93

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 176-183, 193-198, 200-207, 209-217, 219-225 are pending in the application.
227-233, 237-323 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 176-183, 193-198, 200-207, 209-217, 219-225, 227-233, 237-323 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☒ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☒ been filed in parent application, serial no. 070,503; filed on 8-28-79
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

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15. The two preliminary amendments dated April 20, 1992 and single amendment dated November 17, 1992 have been entered.

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 176-183, 193-198, 200-207, 209-217, 219-225, 227-233 and 237-323 are rejected under 35 U.S.C. § 102(a) as being fully met by either of Japanese patent 55-160044 or 56-2336.

Each reference discloses an organotin mercapto acid ester or organotin mercapto acid ester halide in combination with a mercapto alkanol-derived ester of a hydrocarbyl monocarboxylic acid as a heat stabilizer system for vinyl halide resins. The species of each stabilizer, i.e., organotin and mercapto ester, are far more numerous than the two species set forth in applicants foreign priority applications filed August 29, 1978 and May 11, 1979. Applicants earliest U.S. filed application SN 07/254,313 filed ^{April} May 15, 1981 is the earliest application which disclosure supports the broad class terminologies and species set forth in this application. The references' publication dates - December 1980 for Japanese patent 55-160044 and January 1981 for

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Japanese patent 56-2336 antedates the May 15, 1981 filing date. The Board of Patent Appeals and Interferences in its decision dated in parent application 254,313 agreed with this rationale (pages ^{2 to 7} of said decision).

The Foure and Mendelsohn 37 C.F.R. § 1.132 declarations proffered during the prosecution of the parent applications 254,312; 273,669 and 633,187, contend that applicant's foreign application disclosures support applicants contention that a generic appreciation of all and any organotin compounds having a Sn-S and/or Sn-halogen bond is contained in those priority documents. The English translations comprising exhibit B which is an attachment to applicants preliminary amendment in parent application SN 633,187, relates that the mercapto alkanol ester of a hydrocarbyl or optionally substituted hydrocarbyl monocarboxylic acid (page 3, last paragraph) can be advantageously added to various ostensibly known tin-containing stabilizers (pages 1, 5 and 6) to improve the latter's performance in vinyl halide resins exposed to elevated temperatures. The disclosure on page 6, lines 6 to 10 specifically states: "It is remarkable that these results [discoloration inhibition and retention of original viscosity properties] can be obtained as much with mono-or di-organic tin derivatives, as with sulfur-free tin salts, as with sulfur-containing tin salts, or with mixtures of these".

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The following tin containing compounds are revealed:

On page 8:

di-n-octyl tin bis dioethyl mercapto acetate.

On page 9:

The condensation product of butyl and butyl thiostannic acids.

On page 10:

butyl stannic acid anhydride and di-n-butyl tin bis (isodecyl mercapto acetate).

page 13- di-n-butyl tin bis (isodecyl mercapto acetate)

This disclosure is not tantamount to encompassing all and any known organotin stabilizers at that time much less those having Sn-S bonds. No Sn-halide bonded compounds are disclosed whatsoever. Applicants earlier foreign filed priority documents were simply not enabling. Applicants have cited over forty references in their reference disclosure statement in support of their contention that at the time applicant, Chenard et al., made their invention, the artisan would have no problem appreciating the application of Chenard's teaching to all conventionally known organotin compounds including those having Sn-S and/or Sn-halogen bonds. However the very multitude of patents proffered showing various types of organotin structures vis-a-vis their effect on static (color) or dynamic (viscosity changes) stability indicates that all organotin compounds were not inevitably equivalents for all heat stabilizing purposes. Therefore it would not be

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presumed that Chenard's disclosure would be considered instructive for application to all and every organotin Sn-S containing-stabilizer's enhancement.

17. Claims 176, 183, 237 to 246, 247-254, 261-272, 279-287 and 295 are rejected under 35 U.S.C. § 102(a) as being fully met by Kugele (114).

This reference discloses as a PVC stabilizer the mixture of either an organotin mercapto acid ester or organotin mercaptoacid acid halide of formulas II, III, IV or V with a mercaptoester, HSR-O(O) C-R-SH . This reference's earliest disclosure for this combination is February 26, 1982. Applicants nowhere in any document discloses any actual mercapto alcohol ester of a mercapto substituted alkanolic acid although on page ^{8 line} 1 of the parent application filed April 15, 1981, the acid portion $\text{O(O)CR}^2\text{H}$ is described as possibly containing a mercapto substituent. No disclosure is provided to delineate what is intended to be conveyed, i.e., whether $-\text{RSH}$, $-\text{SH}$, $-\text{SR}$ or another $-\text{S-R-C(O)OR}$ radical ¹ as contemplated.

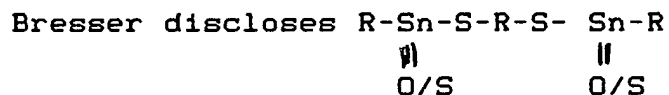
18. Claims 193-198 and 237-295 are rejected under 35 U.S.C. § 102(a) as being fully met by Bresser et al. (486).

Reference discloses a tertiary stabilizing system for PVC resins. The effective filing date for the claimed invention is February 26, 1981, which antedates applicants earliest disclosure, SN 254,313 filed April 15, 1981. The stabilizer

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system comprises mono (formulas II-V) and di (formulas XII-XV) organotin mercapto compounds and the subject mercapto alkanol derived carboxylic acid esters. Except for the organotin structures XII and XIII, applicant has no support for these various permutations upon which compositions and methods the instant claims organotin-S and thiol combination reads.

19. Claims 193, 198 and 237-295 are rejected under 35 U.S.C. § 102(a) as being fully met by Bresser et al. (984).



(claim 1 or 2), optionally with diorganotin mercapto compounds, and a mercapto stabilizer which can be a mercapto alcohol ester of a mercapto carboxylic acid (claim 3). Applicants claims broadly encompass this invention (Sn-S containing organotin compound and mercapto ester of a monocarboxylic acid) but finds no support therefor in any of the parent applications or the instant application.

20. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 176-183, 193-198, 200-207, 209-217, 219-225, 227-233 and 237-323 are rejected under 35 U.S.C. § 103 as being unpatentable over Gough et al. in view of Stapfer, Hechenbleikner et al. (129 and 527), Wowk, Schroeder et al., Weinberg et al. (750), Kauder et al. (915).

Gough et al discloses (formula "g" in column 3 where "h" is 1 and "j" is zero) mercapto alkanol esters of a monocarboxylic acid as PVC heat stabilizers when used with an organotin borate. Accordingly applicants acknowledgement of this reference's existence (specification at page 3) as being part of the "description of the prior art" which may be described as "In general when the prior art additive contains a mercaptan function, the sulfur atom is always located in the acid residue.." is clearly erroneous. The species 2-thioethyl octanoate, $\text{HS-C}_2\text{H}_4\text{-O(0)C-C}_7\text{H}_{15}$, contains the -SH radical in the alcohol derived portion. Moreover the reference teaches that both dynamics (viscosity retention) as well as static (discoloration inhibition) instabilities are ameliorated by the combination's use. Although Gough's organotin compound used as his co-stabilizer is an organotin borate, patentee does in

comparative example 7 in table 1, show that relative to no stabilizers presence (example 12 in table 1) or merely a mercapto acid ester's presence (example 16 in table II), use of another organotin compound per se which is within applicants purview "DMTBOT", an organotin mercapto acid ester, gives superior stability. Since said compound's stabilizing effect (10' to grey) is even greater than that afforded by the organotin borate per se (examples 17-19 showing 2 minutes to greying), it would be reasonable to expect that the superior tin stabilizer, DMTBOT, would experience some enhancement in its stabilizing performance by supplementation with the same class of mercapto compounds which include those species as stated supra which contains the mercapto (thiol) radical in the alcohol derived portion of the molecule.

Gough's thiol-containing antioxidants' use to the enhance organotin borate's performance is an extension of the teachings of Stapfer and the Hechenbleikner patents, that sulfur-containing compounds synergistically extend the heat stability of organotin compounds inclusive of the alkyl and alkylthio-stannic acids, known alternative stabilizers to the organotin mercapto acid esters (column 1, lines 53-column 3, line 11). The bis (monobutyl tin di(isooctyl mercaptopropionate)oxide species recited on 10 and 11 is within applicants sixth generic formula recited on page 15. Kauder's sulfides (formulas B-D in column 4)

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are the sulfide analogues with applicants same generic formula when $Z=S$ as depicted on page 16 of this application.

The organotin halide compounds of Wowk and Schroeder, encompassed within applicants Sn-halide definition are also known organotin heat stabilizers for PVC which performance would be expectedly enhanced by the Gough's thiol compounds presence.

21. Unapplied references are cited as of interest.



VERONICA P. HOKE
PRIMARY EXAMINER
ART UNIT 159B

V. Hoke:cb
March 24, 1993
March 25, 1993